

## **FIREPLACE SURROUND**

### **Background of the Invention**

#### 5   **Technical Field**

The present invention generally relates to fireplaces, and more particularly relates to a fireplace surround for a fireplace.

#### **Related Art**

10       Fireplaces have become increasingly commonplace in homes, businesses, and other buildings. A fireplace provides benefits including the generation of heat as well as an aesthetically pleasing arrangement of flames, sounds, and smells. A fireplace is typically mounted in or adjacent to a wall and may include one or more exposed surfaces.

15       The fireplace box that defines the combustion chamber may assume a number of different configurations. In traditional wood burning fireplaces of brick and mortar construction, the combustion chamber generally extends over the full height of the fireplace box, and a log-holding grate rests on the floor of the combustion chamber. For gas burning fireplaces, the burner assembly and associated gas supply mechanisms are typically located below the floor of the combustion chamber but often still within the open cavity defined by the fireplace box. A number of fireplaces also include a heating plenum surrounding the fireplace box. Typically, room air is drawn into the plenum near the bottom of the fireplace box, the air is heated as it travels around the fireplace box within the plenum, and the heated air is emitted back into the room near the top of the fireplace box.

25       In order to provide an aesthetically pleasing design for the exposed fireplace front, most fireplaces include wide metal panels near the top and bottom portions of the open front fireplace box to cover or mask the mechanisms and openings that are otherwise visible. Such panels may be coated with brass, bronze or anodized metal

finishes for improved aesthetics. The vertical area between the upper and lower decorative metal panels generally contains one or more panels of glass that form a seal with the front of the fireplace box or include at least one operable door panel that provides access to the combustion chamber.

Metal panels typically used for fireplace surrounds conduct heat and may become unsafe to touch. Thus, it is desired to provide a fireplace surround surface that has reduced heat conduction properties as compared to a metal surface. Also, although the metal panels cover up unsightly parts of the fireplace, the metal panels themselves may have poor aesthetics. Areas surrounding many fireplaces often include stone, brick or other natural materials or natural-appearing materials. For example, a hearth of the fireplace may be made of stone, brick, or the like. Therefore, the metal panel may contrast unattractively with the natural material surrounding the fireplace or the fireplace hearth. Moreover, it would be expensive to create a top or bottom panel out of stone or brick, and these materials generally prove difficult to shape and size. Also, the mounting of such material may be difficult due to the heavy weight of those materials.

Thus, it would be desirable from both aesthetic and cost viewpoints to provide for a fireplace surround that improves the appearance of a pre-existing or new fireplace while addressing at least those shortcomings of known fireplaces and fireplace surrounds noted above.

## Summary

The present invention generally relates to fireplaces and more particularly relates to fireplace surrounds. One aspect of the invention relates to a fireplace surround for attachment to a fireplace. The surround includes first and second side members formed from a molded material, and a top member formed from the molded material that extends between the first and second side members. The top member defines a cavity that is in fluid communication with a vent of the fireplace to collect heated air from the fireplace. The top member also includes an opening that exhausts heated air from the cavity.

Another aspect of the invention relates to a fireplace that includes a heat source configured to generate heated air, a vent for exhausting the heated air outside the fireplace, and a fireplace surround. The surround includes first and second side members formed from a molded material, and a top member formed from the molded material that extends between the first and second side members. The top member defines a cavity that is in fluid communication with the heated air exhausted from the vent, and further defines an opening configured to exhaust the heated air from the cavity.

A yet further aspect of the invention relates to a fireplace surround that includes a molded first member having first and second sides and an internal cavity defined by the first and second sides. The first side of the surround is open to provide a first access to the cavity, and the second side is defined by a sidewall that includes an aperture providing a second access to the cavity. The first side is configured for mounting to the fireplace adjacent a fireplace vent so that air heated by the fireplace passes through the first access into the cavity. The heated air may then pass out from the cavity through the second access.

A further aspect of the invention relates to a method of forming a fireplace surround for attachment to a fireplace. The method includes forming a first member from a molded material, wherein the first member defines a cavity and is configured for mounting to the fireplace adjacent a vent of the fireplace. The method also includes forming an opening in the first member that provides access to the cavity so that heated air from the fireplace may pass through the vent into the cavity and pass out from the cavity through the opening.

Yet another aspect of the invention relates to a fireplace venting assembly that includes a return air plenum and a surround aligned with an opening of the plenum. The surround includes a surround opening that extends through the surround to vent air from the plenum opening through the surround.

The above summary of the present invention is not intended to describe each disclosed embodiment or every implementation of the present invention. Figures in the detailed description that follow more particularly exemplify embodiments of the

invention. While certain embodiments will be illustrated and described, the invention is not limited to use in such embodiments.

### **Brief Description of the Drawings**

5 The invention may be more completely understood in consideration of the following detailed description of various embodiments of the invention in connection with the accompanying drawings, in which:

Figure 1 is a perspective view of one example fireplace surround assembly according to principles of the invention spaced apart from a fireplace unit;

10 Figure 2 is a cross-sectional side view of the surround assembly and fireplace unit shown in Figure 1 taken along cross-sectional indicators 2-2;

Figure 3 is a front view of the fireplace surround assembly shown in Figure 1;

Figure 4 is an exploded perspective view of the fireplace surround assembly shown in Figure 1;

15 Figure 5 is a close up view of the cross-sectional view of the surround top member shown in Figure 2;

Figure 6 is a rear view of the fireplace surround assembly shown in Figure 1;

Figure 7 is a top view of the fireplace surround assembly shown in Figure 1;

Figure 8 is a side view of the fireplace surround assembly shown in Figure 1;

20 Figure 9 is an exploded rear perspective view of an access panel that may be added to the fireplace surround assembly shown in Figure 1;

Figure 10 is a front view of the access panel shown in Figure 9; and

Figure 11 is a front view of the fireplace surround assembly of Figure 1 including the access panel shown in Figure 9.

25 While the invention is amenable to various modifications and alternant forms, specifics thereof have been shown by way of example and the drawings and will be described in detail. It should be understood, however, that the intention is not to limit the invention to the particular embodiments described. On the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention.

### **Detailed Description**

The present invention generally relates to fireplaces and more particularly relates to fireplace surrounds. In many fireplace applications, it is desirable to cover the metal top, bottom and side panels of a fireplace, the gap that typically exists between  
5 the fireplace and the finished wall surface around the fireplace, and the vents and access openings and controls of the fireplace. In many applications, a fireplace surround or surround assembly as well as a fireplace front must be used to provide the desired aesthetic affect. Further, it may be desirable to use covering materials for the surround that have a natural appearance that blends with the fireplace hearth and other features  
10 around the fireplace, and to use covering materials that are low-cost and relatively easy to form into desired shapes. Moreover, it is often desirable for a fireplace surround to have low heat conductive properties to improve safety of the fireplace. The following example fireplace surrounds address these and other objectives and provide an improvement over known fireplace surrounds. While the present invention is not so  
15 limited, an appreciation of the various aspects of the invention will be gained through a discussion of the examples provided below.

As used herein, the term "surround" means any exposed structural surface that covers at least a portion of the front surface of a fireplace and provides a transition from the combustible material surrounding the fireplace (such as, for example, a sheetrock  
20 wall) to the sheet metal of the fireplace front. The "surround" may function as a door or similar structure that provides access to otherwise covered features of the fireplace. The "surround" may also function as a fireplace front that covers portions of the fireplace, for example, the fireplace viewing surface (e.g., glass), frame or louvers. Thus, a surround according to principles of the invention may be advantageous for combining  
25 several functions of previously required pieces (i.e., door, surround, and front) into a single unit, thereby saving cost for the consumer while providing an aesthetically pleasing solution.

The phrase "viewing surface" is any surface through which at least a portion of an interior of a fireplace may be viewed. For example, a viewing surface may consist of  
30 a pane of translucent tempered or ceramic glass or high-temperature plastic positioned

to cover at least a portion of an opening of a fireplace. The phrase "combustion chamber enclosure" may include any enclosure in which flames and/or heat are generated or simulated. The term "fastener" includes, for example, magnets, clamps, brackets, bolts, screws, and similar structures that secure together two or more members.

An example fireplace 50 illustrated in Figures 1 and 2 includes an outer enclosure 60, a viewing surface 70, upper and lower grills 80, 90, upper and lower vents 85, 95, a combustion chamber enclosure 62, and a combustion chamber 64. A burner 66 positioned in the combustion chamber enclosure combusts gas and thereby generates heat. The burner is typically coupled by a gas line to a source of combustible gas. These features are standard on gas fireplaces and, therefore, are not identified in the drawings. A suitable example fireplace for use with a surround disclosed herein is described and illustrated in U.S. Patent Application Publication No. 2003/0089365, which is incorporated herein by reference in its entirety.

Fireplace 50 may be any type of fireplace, such as, for example, a solid-fuel, gas, or electric fireplace. In the example embodiment, the fireplace 50 is a gas fireplace. Fireplace 50 is provided as an example only, and any other known configuration for a fireplace may also be used. For example, the present invention may be used in conjunction with any prefabricated gas fireplace such as, for example, a direct vent, a universal vent, a B-vent, a horizontal/vertical-vent, a dual direct vent, or any fireplace unit to which the present fireplace surround may be fitted. Further, the invention may be utilized in any configuration of a solid-fuel burning or electric fireplace as well.

Lower vent 85 acts as a room air intake that draws relatively cool room air (in the direction A) into a plenum 75 (portions of which are shown in Figure 2) that surrounds the combustion chamber enclosure 62 and provides fluid communication between the top and bottom vents 85, 95. As the cool air drawn in through lower vent 85 moves around the combustion chamber enclosure 62, heat emanating from combustion chamber 64 heats the air. The heated air rises naturally in the plenum, or is moved through the plenum with a blower (not shown), towards upper vent 85. The

heated air then exits upper vent 85 (in the direction B), which vent serves as an exhaust for the heated air.

A fireplace surround assembly 100 shown in Figures 1-8 may be mounted or positioned adjacent to outer enclosure 60 of fireplace 50. Surround assembly 100 includes a top member 102 that extends in a generally horizontal direction between two vertically oriented side members 104, 106. In addition, surround assembly 100 includes a lower horizontal member 108, although this feature may not be included in some embodiments. Side members 104, 106 and top and lower members 102, 108 may be integrally formed together as a single piece or may be formed as separate pieces or groups of pieces that are then assembled together using, for example, fasteners, adhesives, or some other assembly means. The horizontal direction referred to herein is with respect to a horizontal plane, such as a plane associated with a floor surface on which the surround and fireplace rest, and a vertical plane is orientated in a direction perpendicular to the horizontal plane.

Surround assembly 100 may be constructed of molded materials, for example, a molded material that includes an inorganic ceramic fiber and a binder. The molded materials may be formed by any known molding technique, such as, for example, compression molding or vacuum forming techniques. Exemplary compression molding compositions and forming techniques are described in pending United States Patent Application Publication No. 2003/0049575, which is incorporated herein by reference in its entirety. Additional exemplary molding compositions and forming techniques are described in United States Patent Nos. 5,941,237; 5,996,575; and 6,170,481, which are also incorporated herein by reference in their entirety.

The use of molded materials provides potential design and functional advantages for a surround. For example, the various brackets described herein may be directly molded into the surround rather than being separately secured to the surround with a fastener or the like attachment means. Further options may include directly molding wiring, switches, lighting, and various control features into the molded portion of the surround.

The exact shaping of the fireplace surround 100 may be entirely formed during the compression or vacuum molding process or it may be formed through post-article forming manufacturing processes, such as, for example, drilling, etching, sawing, milling, or other processes. The compression or vacuum molded materials may be  
5 formed and colored so as to have the appearance of stone, brick, or any other natural material that may be desired. Molding processes may be particularly useful for creating surrounds with complicated features that would otherwise be difficult to create if using other methods, such as stamping. For example, a top member formed using a molding process may include a contoured exterior surface, an inner cavity with planar or  
10 contoured surfaces, and an aperture formed between the exterior surface and cavity, which features may all be formed in a single step of forming the top member.

Top member 102 may include front and rear facing sides 111, 113, wherein front facing side 111 is defined by a sidewall 115 that defines a cavity 105, and rear facing side 113 is open. In other embodiments, rear facing side 113 may be partially  
15 closed with a sidewall and include apertures aligned with vent 95 to permit the flow of air into cavity 105.

Top member 102 may include one or more apertures 103 formed in sidewall 115 that provide fluid communication between cavity 105 and air on the outside of sidewall 115. The number and orientation of apertures 103 may depend on the configuration of  
20 grill 90 and vents 95. The generally downward facing orientation of apertures 103 shown in Figure 4 may be desired for directing heat into a room area at a downward angle, although other embodiments may include additional or replacement apertures oriented in different directions.

Surround assembly 100 may also include a shield member 130 and an insulating  
25 member 160 that are mounted to top member 102 within cavity 105, as shown in Figures 4-6. Brackets 110, 120 may be used to secure insulating and shield members 160, 130 to top member 102 (see figure 6). As shown in Figure 7 and 8, the shield and insulating members 130, 160 are mounted within top member 102 (see side and top profiles of assembly 100 shown in Figures 7 and 8) that top member 102 can be flush  
30 mounted against outer enclosure 60 of fireplace 50.



When surround assembly 100 is mounted or positioned adjacent to outer enclosure 60 of fireplace 50, rear facing side 113 is aligned with vent 95 so that heated air exhausted from vent 95 passes into cavity 105. Shield member 130 is positioned relative to vent 85 so that the air from vent 95 is directed at an angle toward aperture  
5 107 along a path represented by arrows 109. Because the air being exhausted through vent 95 is typically heated, contact by this air against shield member 130 may cause the shield member to become very hot. In other embodiments that do not include a shield member, the heated air may contact sidewall 115 resulting in the entire surround to become very hot. In order to prevent sidewall 115 from becoming heated to the point  
10 that it may be a safety hazard, insulating member 160 is positioned so as to be between vent 95 and sidewall 115 to absorb and dissipate heat. In the embodiment illustrated in Figures 4 and 6, insulating member 160 is positioned between shield member 130 and sidewall 115.

Surround assembly 100 preferably rests flat on a floor surface in front of the  
15 fireplace 50. In this manner the floor primarily supports the weight of surround assembly 100. Alternatively, the surround 100 may be attached to fireplace 50 without being supported by the floor.

Surround assembly 100 may be attached to the existing fireplace 50 by left and right side pawl assemblies (connectors) 140, 150. Each pawl assembly 140, 150 is  
20 connected to the back of the surround assembly 100 (see Figure 6), and may be adjusted into a surface of fireplace 50. Alternatively, surround assembly 100 may be connected to fireplace 50 by any appropriate mechanical means, such as using bolts, screws, adhesive, or the like securing methods. Surround assembly 100 may, in some embodiments, be a freestanding unit that is placed in front of fireplace 50 without any  
25 means of connection to fireplace 50.

As shown in the figures, the edges of surround assembly 100 are contoured to improve aesthetics and to remove any sharp edges that could cause injury. However, other shapes or configurations, such as a rectangular shape or any other multi-faceted shape, are contemplated by the present invention.

Surround assembly 100 may further include an access panel 170 that extends along a bottom portion of fireplace 50, for example, between first and second side members 104, 106 below lower member 108. Access panel 170 may be attached to first and second side members 104, 106 with brackets 172, 174. Brackets 174 may be magnets, snap-fit structures, or other quick release fastening structures that may be secured to brackets 172 (such as with a fastener 176). The quick release nature of access panel 170 may provide easy access to certain features of fireplace 50, such as controls for a gas burner, a blower or other mechanisms of the fireplace. If no access to fireplace 50 is needed or desired, or if the need for access is limited, access panel 170 may be permanently attached to surround 100 by screws or the like.

Access panel 170 may be positioned so as to provide a gap (see Figure 11) between the lower horizontal member 108 and the access panel 170 to allow intake air to flow freely into vent 85 of fireplace 50. However, this gap does not have to be present nor does the gap have to be as large as shown in Figure 11. Alternatively, the gap may also be positioned below access panel 170.

In the examples described above, the exhaust vent 95 is positioned at an upper portion of fireplace 50, which position may be advantageous for some fireplace designs. However, in other embodiments, the exhaust vents may be located at other locations around the fireplace, such as along vertical sides or across the bottom of the fireplace. In such alternative embodiments, a portion of the surround assembly equivalent to top member 102 that includes, for example, a cavity, apertures, shields and insulation may be aligned with the fireplace exhaust vent so as to provide the advantages and functions of the examples described above.

In another aspect of the invention, a surround is provided for use with a return air plenum, for example the fireplace plenum discussed above. The surround includes an opening that extends through the surround so that air exhausted from an opening of the plenum vents through the surround opening.

The present invention should not be considered limited to the particular examples or materials described above, but rather should be understood to cover all aspect of the invention as fairly set out in the attached claims. Various modifications,

equivalent processes, as well as numerous structures to which the present invention may be applicable will be readily apparent to those of skill in the art to which the present invention is directed upon review of the instant specification.